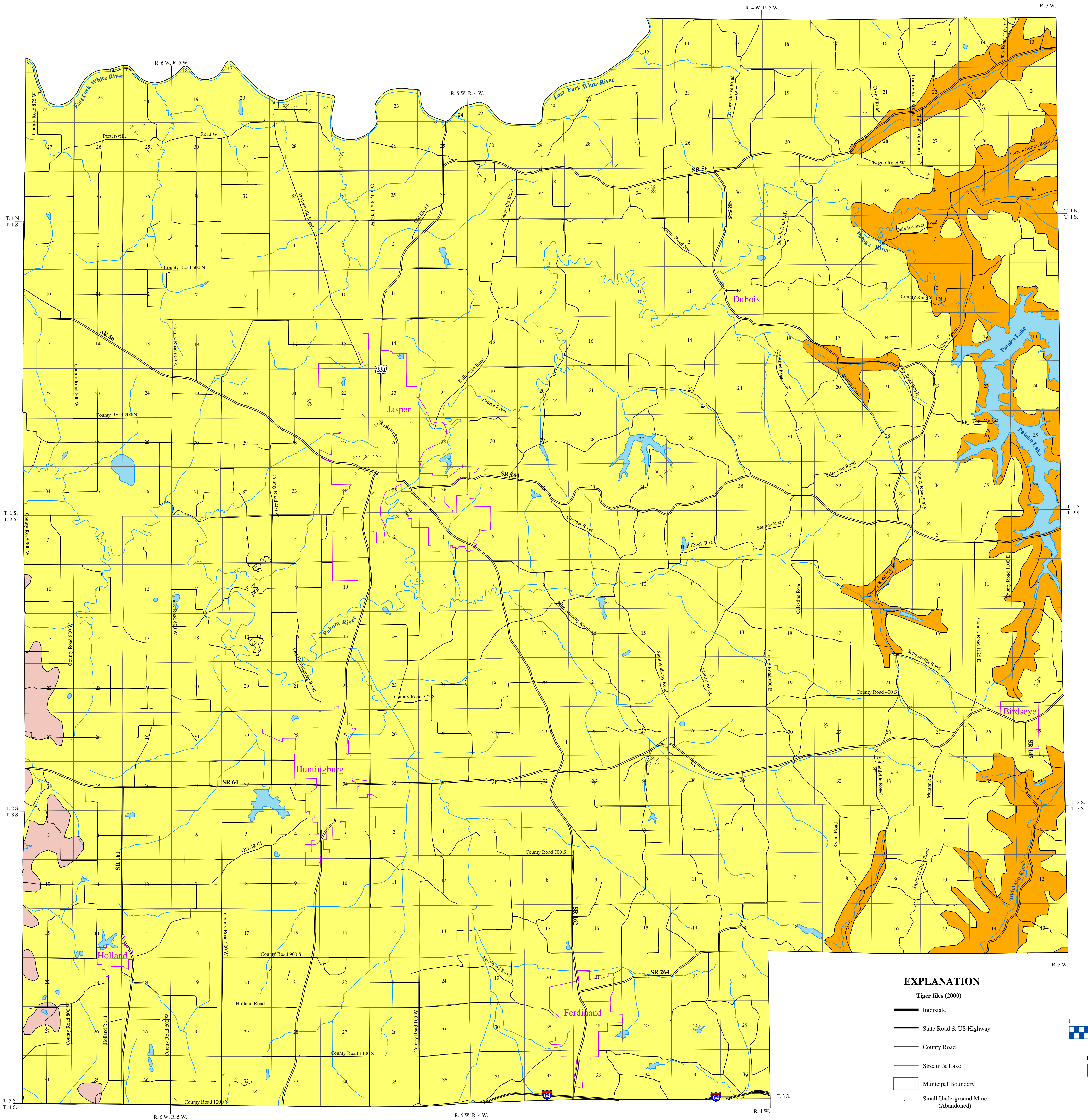


BEDROCK AQUIFER SYSTEMS OF DUBOIS COUNTY, INDIANA



Bedrock Aquifer Systems

In Dubois County rock types exposed at the bedrock surface range from relatively unproductive shales to moderately productive limestones and sandstones. Three bedrock aquifer systems are identified for Dubois County based on bedrock surface lithology. The susceptibility of bedrock aquifer systems to surface contamination is largely dependent on the type and thickness of the overlying sediments. Just as recharge for bedrock aquifers cannot exceed that of overlying unconsolidated deposits, susceptibility to surface contamination will not exceed that of overlying deposits. However, because the bedrock aquifer systems have complex fracturing systems, once a contaminant has been introduced into a bedrock aquifer system, it will be difficult to track.

Mississippian--Buffalo Wallow, Stephensport, and West Baden Groups Aquifer System

This Upper Mississippian bedrock aquifer system is limited to a small area in the eastern portion of Dubois County. This aquifer system is laterally discontinuous and has been truncated northward as a result of pre-Pennsylvanian erosion. It is composed primarily of shale, limestone, and sandstone, and consists of three groups. The three groups comprising this bedrock aquifer system differ in their percentages of shale, limestone, and sandstone. Most of the water will be found in the limestone and sandstone beds. Yields for domestic wells typically range from 3 to 15 gpm.

In the outcrop/subcrop area of the Buffalo Wallow, Stephensport, and West Baden Groups the rock is predominantly shallow and contains numerous, irregular joints. In limited areas some karst has developed in the limestone beds. These conditions warrant considering the aquifer system as a whole to be somewhat susceptible to contaminants introduced at and near land surface.

Pennsylvanian--Raccoon Creek Group Aquifer System

Aquifers contained within this Lower Pennsylvanian age bedrock have generally low yielding capability. The outcrop/subcrop of the Raccoon Creek Group covers most of Dubois County. This aquifer system consists, in ascending order of the Mansfield, Brazil, and Staunton Formations. Shale and sandstone compose approximately 95 percent of the group; and clay, coal, and limestone make up nearly all the rest. Shale is more common than sandstone. The sandstone is mostly fine grained.

In general, the Raccoon Creek Group Aquifer System is considered a dependable ground-water source in Dubois County, with many wells producing from the basal sandstone of the Mansfield Formation. Yields for domestic wells typically range from 2 to 10 gpm. Potentially higher yielding wells may be obtained locally for light industrial, irrigation, farm operation, or small municipal usage of up to 50 gpm.

Water quality is generally good, but in areas of surface and underground coal mining, some localized contamination may have occurred. Natural water quality gets progressively worse (more salty) in wells ranging in depth from 250 to 450 feet as the strata dip beneath younger rocks to the southwest.

Pennsylvanian--Carbondale Group Aquifer System

This Middle Pennsylvanian bedrock aquifer system consists in ascending order of the Linton, Petersburg, and the Dugger Formations. Most of the thickness of this group consists of variable shales and sandstones with some coal and limestone. The only part of the Carbondale Group present in Dubois County is the Linton Formation. West of Dubois County, where more data from well records are available, the Carbondale Group is considered a minor ground-water source with most wells producing from the thicker sandstone and coal units.

Water quality is generally good and the aquifer system is not very susceptible to contamination from the land surface. However, in areas of surface and underground coal mining, some localized contamination may have occurred. The natural quality of well water gets progressively more mineralized (commonly changing from a calcium-magnesium-bicarbonate type to a sodium bicarbonate or sodium chloride type) as wells are drilled deeper than about 300 feet and the rock strata dip beneath younger rocks to the southwest.

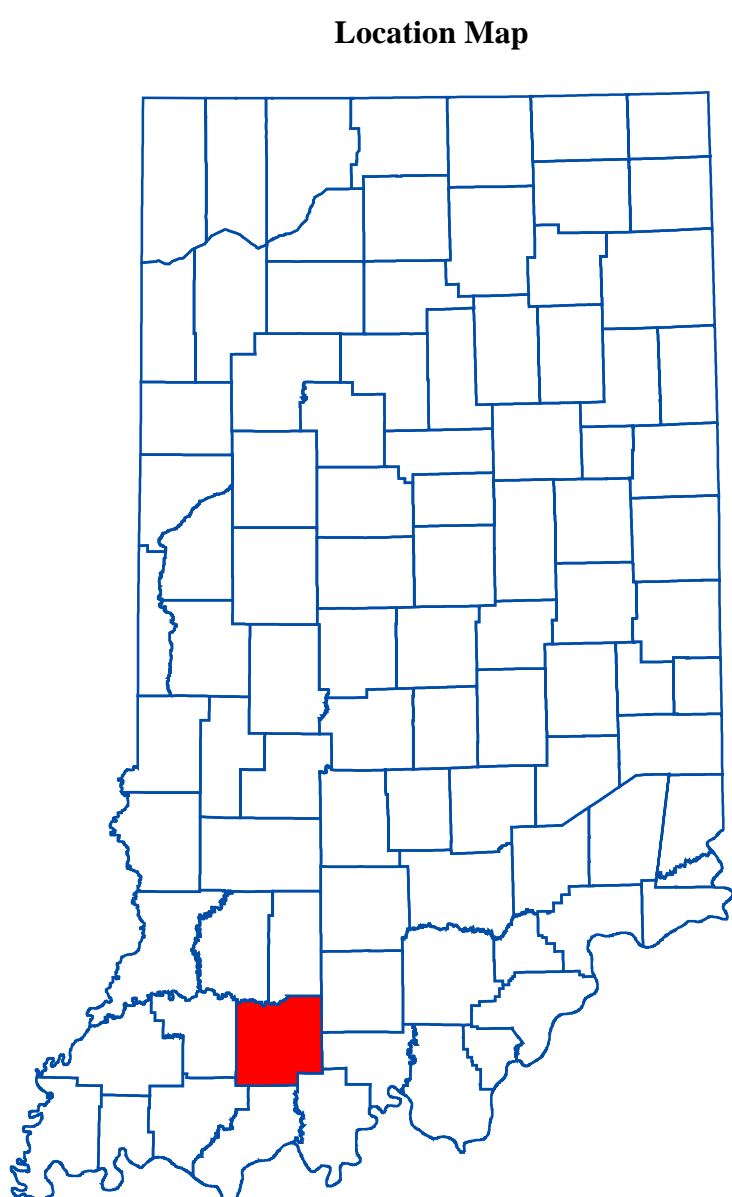
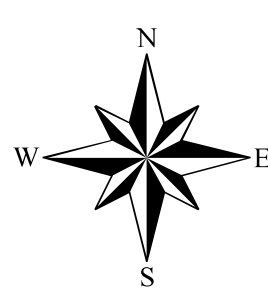
Underground Mine Areas

In these areas various coal seams within the Raccoon Creek Group have been removed by underground mining methods. Approximately 50 percent of the coal seam has been removed, leaving the potential for storage of substantial amounts of water in the larger mines. Although the Division has no records of wells drilled into these mines, yields of a few hundred gpm are possible. A limitation on use of the water could be its more mineralized nature.

EXPLANATION

Tiger files (2000)

- Interstate
- State Road & US Highway
- County Road
- Stream & Lake
- Municipal Boundary
- Small Underground Mine (Abandoned)



Map Use and Disclaimer Statement

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Bedrock Aquifer Systems of Dubois County, Indiana

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This map was created from several existing shapefiles. Underground Coal Mines in Southwestern Indiana (polygon shapefile, 20001002), Township and Range Lines of Indiana (line shapefile, 20020621), Land Survey Lines of Indiana (polygon shapefile, 20020621), and County Boundaries of Indiana (polygon shapefile, 20050621) were all from the Indiana Geological Survey and based on a 1:24,000 scale, except the Bedrock Geology of Southwestern Indiana (polygon shapefile, 20001124), which was at a 1:500,000 scale. City Areas in Southwestern Indiana (polygon shapefile, 1999) was from ESRI and based on a 1:100,000 scale. Streams27 (line shapefile, 20000420) was from the Center for Advanced Applications in GIS at Purdue University.